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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,886	09/29/2006	Hideki Soya	SUT-0307	8132

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EXAMINER	
WILLIAMS, DON J	

ART UNIT	PAPER NUMBER
2878	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,886	SOYA, HIDEKI	
	Examiner	Art Unit	
	Don Williams	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-16 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-16 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 29 September 2006 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 9/29/06.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 10-12, and 14-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Etoh (6,972,795).

As to claims 10, 14, Etoh et al disclose (fig. 1) a light receiver (30a, 30b) for receiving light by converting incident light into electric signals, a readout unit (33a, 33b, 35a) for reading the electric signals acquired from the light receiver (30a) and a plurality of storage units (31a) for storing the electric signals read by the readout unit (33a, 33b, 35a) characterized in that a first drain structure (36a) is disposed adjacent a storage unit (31a) adjacent the readout unit (33a, 33b, 35a) or the readout unit (33a, 33b, 35a) for discharging excess part of the electric signals read by readout unit (33a, 33b, 35a), (column 9, lines 14-37).

As to claims 11, 15, Etoh et al disclose a second drain structure (35a) disposed adjacent the light receiver (30a, 30b) for discharging excess part of electric signals in the light receiver (30a, 30b), (column 9, lines 14-15, lines 33-36).

As to claim 12, Etoh et al disclose light receiver is a photodiode (30a, 30b), (column 9, lines 14-15).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Etoh et al (6,972,795) in view of Nakashiba (5,589,698).

As to claims 1, 6, Etoh et al disclose (fig. 22) an image sensor (380) comprising a light receiver (382a, 382b) for receiving light by converting incident light into electric signals and a readout unit (5,6) for reading the electric signals acquired from the light receiver (382a, 382b) characterized in that a potential gradient is provided, (column 21, lines 36-50). Etoh et al fail to explicitly disclose potential gradient is provided in which potentials about the electric signals gradually change from the light receiver toward readout unit. Nakashiba discloses (fig. 2B) gradually moderating narrow channel effect and a corresponding gradual increase in the electrical potential towards the first region (111) of the channel region of the horizontal charge transfer section, (column 7, lines 57-67). It would have been obvious for one of ordinary skill in the art to modify Etoh et al in view of Nakashiba to include a gradual increase in the electric potential toward the

horizontal transfer section in order to improve charge transfer time (efficiency) in the signal charge transfer process resulting in electric signals transferring at high speeds from the photodiode to the transfer gate.

As to claim 2, 7, Etoh et al disclose (fig. 2, column 21, lines 43-45) potential gradient given at each of the photodiodes (382a, 382b) in order to accelerate charge collection having a potential difference that is readout by the CCD transfer path (5, 6), constitutes gradually enlarging width impurities forming light receiver from the light receiver to readout unit.

As to claim 3, 8, Etoh et al disclose (fig. 2, column 21, lines 43-45) potential gradient given at each of the photodiodes (382a, 382b) in order to accelerate charge collection having a potential difference that is readout by the CCD transfer path (5, 6), constitutes density of impurities forming light receiver from the light receiver to readout unit.

As to claim 4, Etoh et al disclose light receiver is a photodiode (382a, 382b), (column 21, lines 38-40).

As to claim 5, Etoh et al disclose (fig. 22) light receiver (382a, 382b), (column 21, lines 39-40). Etoh et al is silent of disclosing light receiver is a photogate. Photogates, photodiodes, photosensors, photodetectors, photoreceptors, and phototransistors are well known in the art for being used as optical elements that receive and convert light into electrical signals. It would have been obvious for one of ordinary skill in the art to use a photogate as a light receiver element in order to convert light into an electrical signal for further processing resulting in a clear and precise image.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Etoh et al (6,972,795) in view of Nakashiba (5,589,698) and further in view of Mizutani et al (6,144,407).

As to claim 9, Etoh et al disclose (fig. 22) an imaging apparatus (380) that takes in optical images with light receiver (380a, 380b) converting the take-in optical images into electric signals, (column 21, lines 38-52). Etoh et in view of Nakashiba fail to explicitly disclose a photographic subject and a crystalline lens for taking in the optical images of photographic subject. Mizutani et al disclose (fig. 1) a solid-state image pickup device (11), and a lens (13) that is placed in front of the solid-state image pickup device which allows light from the outside to incident through the lens (13) to project an image of a subject on the light receiving and charge transfer portion, (column 6, lines 56-62). It would have been obvious for one of ordinary skill in the art to modify Etoh et al in view of Nakashiba and further in view of Mizutani et al to use the lens as a crystalline lens for taking in the optical images of the photographic subject allowing the image sensor to function at an optimal level resulting in clear and precise images of the photographic subject.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Etoh et al (6,972,795).

As to claim 13, Etoh et al disclose (fig. 22) light receiver (382a, 382b), (column 21, lines 39-40). Etoh et al is silent of disclosing light receiver is a photogate.

Photogates, photodiodes, photosensors, photodetectors, photoreceptors, and phototransistors are well known in the art for being used as optical elements that receive and convert light into electrical signals. It would have been obvious for one of ordinary skill in the art to use a photogate as a light receiver element in order to convert light into an electrical signal for further processing resulting in a clear and precise image.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Etoh et al (6,972,795) in view of Mizutani et al (6,144,407).

As to claim16, Etoh et al disclose (fig. 22) an imaging apparatus (380) that takes in optical images with light receiver (380a, 380b) converting the take-in optical images into electric signals, (column 21, lines 38-52). Etoh et al fail to explicitly disclose a photographic subject and a crystalline lens for taking in the optical images of photographic subject. Mizutani et al disclose (fig. 1) a solid-state image pickup device (11), and a lens (13) that is placed in front of the solid-state image pickup device which allows light from the outside to incident through the lens (13) to project an image of a subject on the light receiving and charge transfer portion, (column 6, lines 56-62). It would have been obvious for one of ordinary skill in the art to modify Etoh et al in view of Mizutani et al to use the lens as a crystalline lens for taking in the optical images of the photographic subject allowing the image sensor to function at an optimal level resulting in clear and precise images of the photographic subject.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Don Williams whose telephone number is 571-272-8538. The examiner can normally be reached on 8:30a.m. to 5:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Georgia Epps
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